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Kurasawatrechus kyokoae, a New Anophthalmic Trechine Beetle Found in a Sandstone Cave of Japan*,**

With 4 Text-figures

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ABSTRACT An anophthalmic trechine beetle is described for the first time from a sandstone cave of central Japan. It belongs to the genus *Kurasawatrechus* and seems to have been derived from an ancestor common with *K. endogaeus* S. Uéno et Baba. It is, however, different from the endogean species in the length of antennae, the shape of pronotum, the mode of microsculpture, the structure of the apical part of copulatory piece, and other minor details. The new name *Kurasawatrechus kyokoae* is given for the new species.

Nearly a hundred species of anophthalmic trechine beetles have hitherto been described from the Japanese Islands. Many of them are found only in limestone caves, though there are others which have been known from lava caves, tuff caves, adits of mines and endogean habitats. No troglobiontic trechines have ever been recorded from sandstone caves, which are few in number and almost always poor in the fauna.

Near the northern end of the Gomadô Hills in Niigata Prefecture, central Honshu, there is a cave called Ohsawa-dô. Local people call it 'shônyû-dô' or a stalactite cave, but in reality it develops in calcareous sandstone of the Haizumé Formation belonging to the middle to the late Pliocene. It is unusually large for a sandstone cave, probably because of the calcareous nature of the mother rock. Like limestone caves, it seems to have been formed by erosion and breakdown, and the walls are partially coated with flowstone. The fauna is not particularly rich, but contains some interesting species of cave animals. The trechine beetle to be described in the present paper is one of those troglobiontic forms.

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The authors wish to dedicate this interesting new species to Mrs. Kyôko Kato, as the type cave was first visited and investigated with her assistance.

Kurasawatrechus kyokoae S. Uéno et Baba, sp. nov.

(Figs. 1–3)

Length: 3.20–3.45 mm (from apical margin of clypeus to apices of elytra).

Closely allied to *K. endogaeus* S. Uéno et Baba (1965, p. 17, figs. 1–2) of Mt. Yoné-yama, but somewhat smaller on an average and lighter in colour, having longer antennae and shorter pronotum. The microsculpture is extensively reticulated on pronotum and elytra. The copulatory piece is a little smaller and has a styliform apical part.

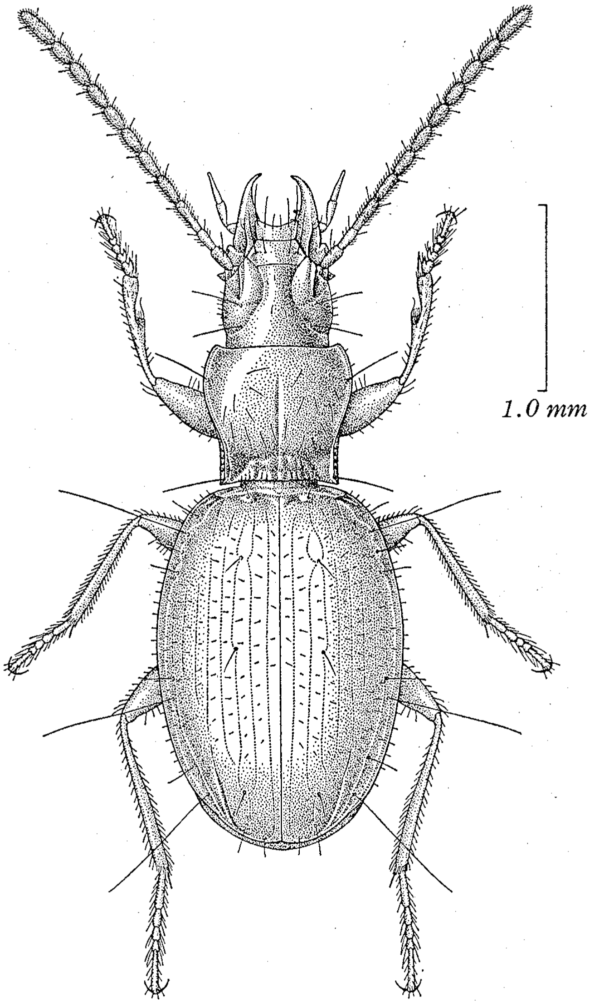
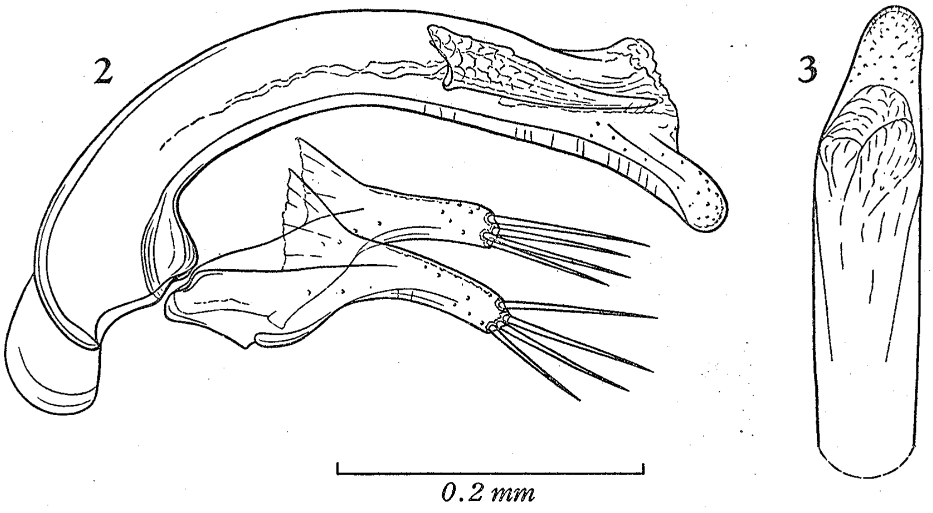


Fig. 1. *Kurasawatrechus kyokoae* S. Uéno et Baba, sp. nov., ♂, of Ohsawa-dô Cave in the Gomadô Hills.

Colour reddish brown, shiny, translucent when alive; palpi, antennae (except for segments 2–4), ventral side of hind body, and legs yellowish brown. Head as in *K. endogaeus,* but the genae are a little more evenly convex; mentum tooth always bifid; antennae longer than those in *K. endogaeus,* reaching basal one-third of elytra in both ♂ and ♀; antennal segment 2 about two-thirds as long as segment 3 and evidently shorter than segment 4, which is about six-sevenths as long as segment 3, segments 7–10 ovate, each about twice as long as wide, terminal segment the largest. Pronotum shorter than in *K. endogaeus,* widest at about two-thirds from base and a little more strongly contracted posteriad than anteriad, though the base is slightly wider than apex due to the ante-basal sinuation of side borders; basal part somewhat shorter than in *K. endogaeus*; PW/HW 1.36–1.37 in ♂♂, 1.31–1.38 in ♀♀, PW/PL 1.12 in ♂♂, 1.15–1.16 in ♀♀, PW/PA 1.27 in ♂♂, 1.24–1.30 in ♀♀, PW/PB 1.21–1.22 in ♂♂, 1.19–1.26 in ♀♀, PB/PA 1.03–1.05 in ♂♂, 1.04 in ♀♀; surface less convex and more sparsely pubescent than in *K. endogaeus*; sides less arcuate in front than in *K. endogaeus,* rather widely sinuate at about one-fourth from base, and then nearly subparallel or gently divergent towards hind angles, which are more or less sharp and usually produced postero-laterad; side margin distinctly notched behind the ante-basal sinuation; base either arcuate or slightly bisinuate; median line distinct, widening near base; basal area rugose; other features as in *K. endogaeus.* Elytra somewhat broader and shorter on an average than those in *K. endogaeus,* widest at about four-ninths from base; EW/PW 1.60–1.62 in ♂♂, 1.57–1.58 in ♀♀, EL/EW 1.42–1.43 in ♂♂, 1.41–1.43 in ♀♀; sides more widely reflexed before middle than in *K. endogaeus* and a little more strongly arcuate; apical striole usually directed to the site of stria 7 but sometimes (including the holotype) joining stria 5; other features as in *K. endogaeus.*



Figs. 2–3. *Kurasawatrechus kyokoae* S. Uéno et Baba, sp. nov., of Ohsawa-dô Cave in the Gomadô Hills. —— 2. Male genitalia, left lateral view. —— 3. Apical part of aedeagus, dorsal view.

Microsculpture of head distinct, mostly isodiametric though more or less wide on vertex; that of pronotum and elytra mostly composed of wide polygonal meshes though partially consisting of irregular lines. Chaetotaxy normal; submentum with a transverse row of eight setae; elytral stria 3 with two setiferous dorsal pores around basal one-sixth and a little before middle; preapical pore more distant from apex than from suture and closer to apical striole than to suture. Ventral surface sparsely pubescent except for lateral parts. Legs as in *K. endogaeus*.

Male genital organ very small though moderately sclerotized. Aedeagus only one-fourth as long as elytra, tubular, regularly arcuate, and not particularly curved

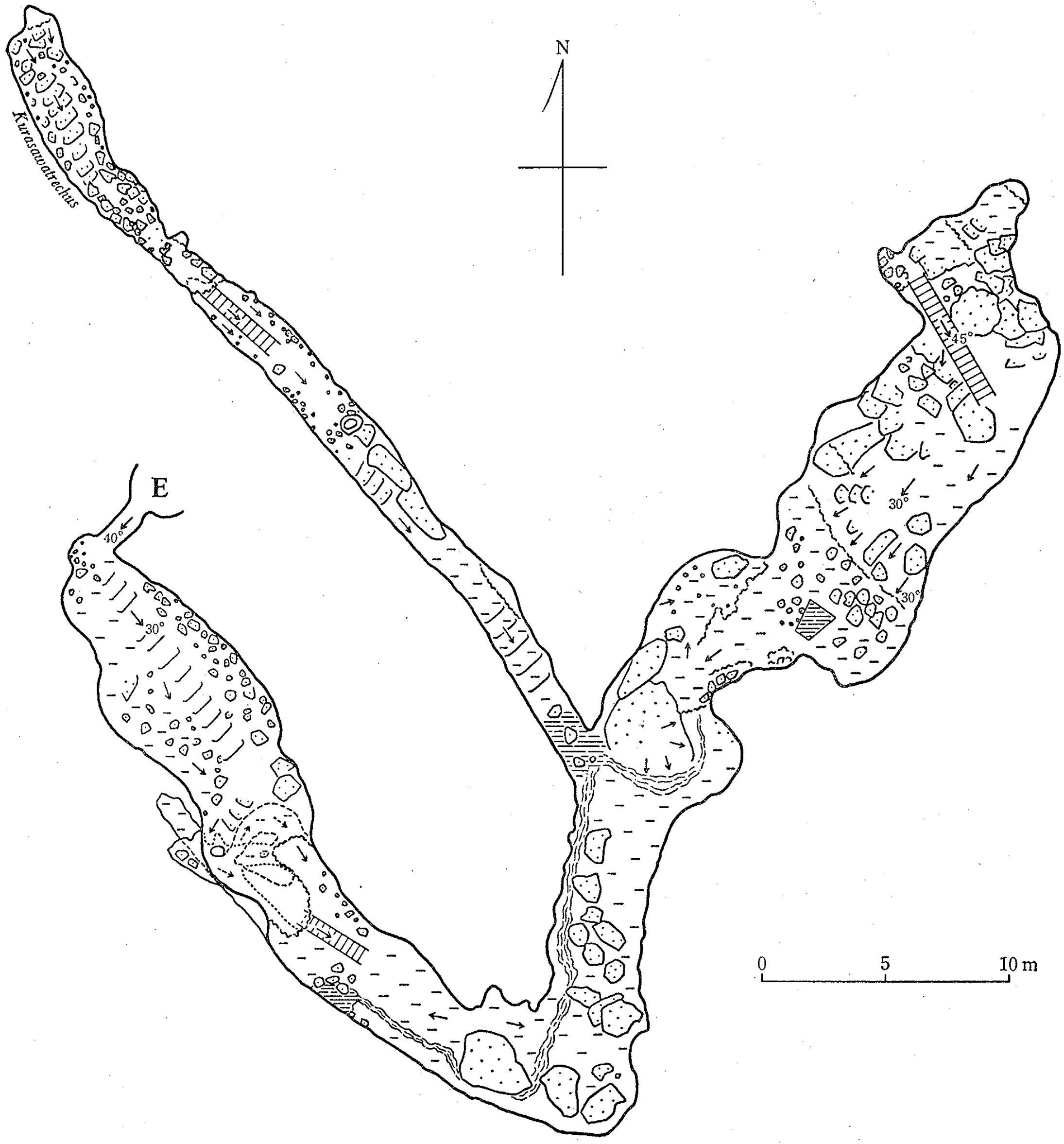


Fig. 4. Map of Ohsawa-dô Cave, at Ohsawa of Muramatsu-chô in Niigata Prefecture. E — Entrance.

at the basal part, which is small and bears a large sagittal aileron; viewed laterally, apical lobe moderately prolonged, slightly curved ventrad and rather widely rounded at the extremity; viewed dorsally, apical lobe fairly long, gently inclined to the left, gradually narrowing apicad and rounded at the extremity; ventral side nearly straight behind middle in profile. Inner sac armed with a relatively small copulatory piece, which is spatulate, attenuated, styliform and gently turned up in apical part, and pointed at apex; surface of the piece scaly in basal half. Styles broad, left style being longer than the right, each provided with four apical setae.

Type-series. Holotype: ♂, allotype: ♀, 30–III–1974, S. Uéno leg. Paratypes: 1 ♀, 19–VII–1972, K. Baba leg.; 1 ♂, 30–III–1974, S. Uéno leg. All preserved in the collection of the National Science Museum, Tokyo.

Type-locality. Sandstone cave called "Ohsawa-dô", at Ohsawa of Muramatsu-chô in Niigata Prefecture, at the northern side of central Honshu, Japan.

Notes. It is doubtless that the present species has been derived from an ancestor common with *K. endogaeus*. Of these, the latter seems to be closer to the ancestral form, since it is relatively dark in coloration and has short antennae. It has so far been known only from Mt. Yoné-yama, but other populations of the same species possibly occur in nearby hills. Its range of distribution must have been wider in the past than at the present, probably extending northeastwards along the Uonuma Hills. One of these ancestral populations may have successfully settled down in the Gomadô Hills at the northern extension of the Uonumas, subsequently colonized Ohsawa-dô Cave, and become differentiated into the cave form recognized at present as *K. kyokoae*.

Ohsawa-dô Cave lies on the ridge of the Gomadô Hills at an altitude of about 230 m. From the small entrance, the cave rapidly descends first southwestwards and then southeastwards for about 20 m to the lowest level. About 12 m further, the cave turns north at a right angle and continues for about 40 m to the innermost which is blocked with breakdown. A narrow branch to the left leads off at a point about 12 m from the rectangular bend and extends northwest for about 38 m. This passage gradually ascends from the branching point to the innermost, and is not affected by seasonal fluctuation of the climate. *Kurasawatrechus kyokoae* has been found only at the innermost part of this branch, from under stones lying on the wet muddy floor. The species seems to be rare, since it has been taken only twice in spite of repeated investigations and extensive trappings made by the authors.

ACKNOWLEDGEMENT

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REFERENCE

Uéno, S.-I., and K. Baba, 1965. Occurrence of a new *Kurasawatrechus* (Coleoptera) in an endogean habitat. *Bull. Natn. Sci. Mus. Tokyo,* **8**: 17–21, pl. 1.